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SOVIET RESEARCH AND DEVELOPMENT POLICY

This non-serial report contains selected translations of Russian articles on the planning and administration of Soviet research and development and the introduction of scientific achievements into industry.

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CHAIRMAN OF URAL SCIENTIFIC CENTER DESCRIBES RESEARCH CARRIED OUT UNDER 'URAL' COMPLEX PROGRAM

Moscow IZVESTIYA in Russian 11 Jan 80 p 3

/Article by Hero of Socialist Labor, Academician S. Vonsovskiy, chairman of the Presidium of the Ural Scientific Center of the USSR Academy of Sciences: "Virgin Soil of the Gray Urals"/

/Text/ Addressing the November (1979) CPSU Central Committee Plenum, Comrade L. I. Brezhnev said: "In the solution of the urgent problems which face the national economy, especially on the threshold of the next five-year plan, the party is depending on effective assistance on the part of our scientists...."

The Urals Economic Region of the country is an important national economic complex, which includes the fuel and power and the raw material sectors, as well as sectors which produce means of production and consumer goods, and has developed agriculture. And it is quite clear that the scientists of the Ural Scientific Center of the USSR Academy of Sciences consider as one of their main tasks the elaboration of scientifically sound means of developing the economy of the Urals.

The main results of the research of our scientists have been generalized in the "Ural" complex program. What problems are arising in it? I will dwell only on the most important ones. First of all it is a matter of the intensification in the Urals of industrial production--the renovation of operating enterprises. Here this problem is more acute, perhaps, than in other regions of the country. For the Urals have been under development as an industrial region for more than 250 years. Here the combination of old--with a backward processing method and equipment--plants with modern industrial giants, the combination of old cities and urban-type settlements with modern industrial centers occur.

This circumstance dictates as one of the most important trends of scientific and technical progress in the Urals the development here of basic and applied research and development, which involve the development of fundamentally new technological processes, mechanization and automation and the complete renovation of enterprises.

The problem of providing industry of the Urals with mineral resources is very important. For more than two and a half centuries the mineral resources have been worked intensively here. The processing capacities are steadily increasing, while the mining of ores is declining. Thus, from 1965 to 1975 the production of pig iron increased 1.5-fold, while the mining of commercial ore decreased by 5 percent. At present the metallurgical enterprises of the Urals are operating mainly on ore which has been hauled in. Consequently, major geological, geophysical and economic studies are needed, which are aimed at the increase of the efficiency of prospecting and the growth of the reserves of ores of ferrous and nonferrous metals and other minerals in the Urals.

The economic geological evaluation of the mineral resource base of the Urals will become the basis for the further development of the mining industry and the main directions of geological prospecting. The geophysicists of our center are developing the scientific principles and equipment for detecting deposits at depths of more than 1 km, since in practice the ore deposits of the Urals have been worked only on the surface or to a depth of not more than 500 m.

Particular attention is being devoted to the involvement in the orbit of industrial development of the minerals of the Northern Urals, as the undeveloped region which is closest to the industrial Urals and which has diverse natural resources. In recent years the amount of research work, which has been performed by the Ural Scientific Center and other scientific institutions for the north, has increased sharply and will increase more. The geophysicists of the center have discovered there very large anomalies, which promise, if their ore character is confirmed, to provide deposits with reserves in the billions of tons of iron ores. We consider it expedient to raise the question of developing an Arctic Territorial Production Complex for the working of Vorkuta coking and power coals, the iron ore of the Shuchinshoye deposit, the water resources of the Ob' River and so forth.

As before, the Urals are the richest storehouse of minerals, including iron ore resources. But these ores are compound ores, they contain along with iron other components which, on the one hand, increase the value of the ores but, on the other, complicate their recovery by traditional methods. Billions of ferrotitanium ores of the Medvedevo and Kopanskoye deposits remain untouched, since it is impossible to recognize any on the existing systems as suitable for their working. Only titanomagnetites of the Kachkanar types are being used, but in this case vanadium is extracted, the titanium is lost with the "tailings" and slags.

Departmental barriers still stand in the way of the complete processing of mining raw materials. Thus, a large amount of copper is contained in the ores of the Vysokogorskiy mine, which is under the jurisdiction of the USSR Ministry of Ferrous Metallurgy. It can be extracted at the same time and, hence, less expensively than at operating enterprises of nonferrous metallurgy. But it is being sent to the dumps. The proprietors do not extract the copper from the tailings.

During the years of its existence many tens of millions of tons of iron have been mined along with bauxites at the Severoural'sk bauxite mine. Where is it? In the slimes of the alumina works. But, after all, no less iron is contained in them than in commercial ores.

The workers of the enterprises understand perfectly well: it is unprofitable for the most part to extract the main components from ore while losing the accompanying components. The workers favor production without waste. But for this they need well-developed technological processes, finished designs and allocations for their realization. Perhaps there are no new developments? There are. More than 10 new technological processes with the equipment design, which provide for the practically complete processing of ores without tailings, have been developed at the Institute of Metallurgy of our center alone. But all this requires pilot industrial testing. The enterprises do not have experimental bases, and the ministries are in no hurry to set them up.

In our opinion, the solution here is to convert the enterprises, which process multicomponent raw materials, into wasteless intersectorial complexes. In the Urals this applies to the overwhelming majority of plants of nonferrous and ferrous metallurgy. It is necessary for the ministries, which are responsible for their scientific and technical progress, to actively promote it, not to divide the products into "their own" and "others'" and to show concern about completely processing the raw materials.

In all this an important role belongs to USSR Gosplan and the USSR State Committee for Science and Technology. It has long been time for the enterprises, which process multicomponent ores, to plan the development of all the works which are necessary for the complete, wasteless utilization of raw materials. It is also very important to interest collectives economically in obtaining a greater number of components and to increase the degree of their extraction. It is extremely desirable to expedite the development of an experimental base for the pilot industrial testing of the recommendations of scientists.

The Urals are a region of large-scale machine building. Therefore, we are devoting much attention to the comprehensive problems of its development. The program elaborated at our center is aimed at optimizing the process of developing unique machinery, machines and complete sets of machines for the leading sectors of the national economy of the country. The development of a fundamentally new metallurgical line, in which the smelting, casting and rolling of the metal are combined, is an example of a major scientific and technical problem, which is being solved comprehensively within the framework of this program. The department of machine building, which was recently set up here and is headed by Corresponding Member of the USSR Academy of Sciences G. Khimich, was the organizer of this work. Scientists of the institutes of metallurgy, the physics of metals, mathematics and mechanics, as well as specialists of a number of metallurgical and machine building enterprises, were involved in solving the problem. The idea, on which the new metallurgical complex was based, radically changes the established processing method and promises an enormous economic impact on a national scale.

Unfortunately, for the present there are few such examples, when academic science from the very start would have participated in the solution of a major practical problem shoulder to shoulder with production workers. It seems that the assertion that the initiative here should in many ways come from the production workers, will not provoke an argument. The managers of enterprises must know the situation in the sector thoroughly and must react quickly to the demands of the national economy.

For many enterprises this requirement of technical progress has not yet become an organic need. It is obvious that the management mechanism so far is still inadequately effective with respect to the assimilation of scientific and technical innovations by enterprises, and therefore their fate often depends on the personal attributes of the economic manager, on his desire or unwillingness to assume "extra" concerns.

Here is a typical example. We intended along with experienced metallurgists to work at solving a number of problems of powder metallurgy and at developing the technology of the furnaceless production of iron at the base on the Alapayevsk Metallurgical Combine. For this purpose we proposed to set up at the enterprise a pilot scientific and technical plant. But, unfortunately, we did not receive support from the managers of the Uralchermet Association. It is not that they rejected it. No, its importance and significance also do not give rise to doubts among them, and in word they all express support. It is just that no practical steps followed. Meanwhile the Alapaeyvsk Metallurgical Combine urgently needs modernization--the participation of scientists in this matter obviously would be of great benefit. And the Ural Scientific Center would acquire a good scientific production base.

Great attention in the "Ural" program is devoted to questions of the use, protection and reproduction of natural resources. The elaboration of the ecological principles of the rational use of nature in the Urals is one of the most important regional research programs. Its results are of great importent both for the implementation of other programs, which are devoted to the problems of the Urals Region, and for the drafting of plans and forecasts of the development of the productive forces of the Urals Economic Region.

Studies of the use of nature are of enormous interest both from a scientific point of view (since we are dealing with a complex, unique combination of natural conditions and anthropogenic influences) and from a practical, socially significant point of view, since the Urals are one of the main industrial regions of the country. The high level of urbanization and concentration of industry, the high degree of utilization of natural resources, the pollution of the environment and the scarcity of manpower resources make the studies of nature, the habitat and the use of nature in the Urals especially urgent not only in connection with the problems of the region, but also in the framework of the interaction of man and the biosphere.

The successful fulfillment of the large-scale "Ural" program depends to a decisive extent on the implementation of a large set of measures, which were specified by recent decrees of the party and the government on the further improvement of the economic mechanism. In particular, both new forms of the coordination of the activity of all ministries and departments and the optimum combination of sectorial and territorial management, which would eliminate departmental isolation in this work, will be required.

The status of the coordinating council, which is heading this program, should also be discussed. At present it is an authoritative public organ. This is already quite a lot, but nevertheless clearly inadequate for managing such a complex and large-scale matter. The council should be given all the necessary rights, including the right to manage the finances. It must be considered, what the sources of financing will be and how to pool assets. Opportunities should be found without fail to overcome the departmental barries in this matter as well.

In conclusion I would like to emphasize once again that science "in pure form," science for the sake of science today cannot exist. Scientific work is closely interconnected with organizing work. To develop science means to improve both in-depth basic research and all the mechanisms of its link with practice and production. Precisely this principle is the basis for the activity of the Ural Scientific Center of the USSR Academy of Sciences.

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GEORGIAN SSR GKNT CHAIRMAN DISCUSSES R&D ADMINISTRATION USING 'GOAL-DIRECTED COMPLEX PROGRAMS'

Moscow PRAVDA in Russian 1 Feb 80 p 3

/Article by Chairman of the Georgian SSR State Committee for Science and Technology and Vice President of the Georgian SSR Academy of Sciences I. Gverdtsiteli (Tbilisi): "Speeding Up Progress"/

> /Text/ What does it mean in our times to improve the system of management of scientific and technical progress? This complicated problem must be solved in each case with allowance made for the specific conditions which have arisen in the individual regions of our country. Thus, in recent years the dispersion of scientific forces among a large number of research trends has come to light in Georgia. Given the lack of design and pilot production capacities, the introduction of scientific and technical achievements has entailed great difficulties. The need to focus the scientific and technical potential available in the republic on the most important and promising trends has become obvious.

The main means for this is goal-directed complex programs. At present 16 such programs are being implemented in Georgia, another 9 are at the formative stage. In all more than 300 themes are included in them. Each program unites the efforts of 5 to 20 organizations. It can be said that the program-goal method of management of research in the republic is undergoing semi-industrial tests, which it is planned to complete by 1981.

It is possible to see what this promises from the example of the electronics industry development program. Scientists of sectorial and academic institutes--cybernetics, metallurgy, the laboratories of Tbilisi University and others--are jointly developing new highly efficient semiconductor instruments and microcircuits. The opportunities for the sector to conduct basic research are increasing, while the scientific subdivisions are obtaining the prospects for the rapid transfer of their achievements to practice and the pilot design base.

The "Kurorty" program, which is headed by the Institute of Health Resort Studies of the republic Ministry of Health, is being implemented in approximately the same way. In conformity with it 21 organizations of various ministries and departments are performing several tens of scientific research jobs. The goal of the joint five-year work is the development of the first health resort map of Georgia and the preparation of recommendations on the long-term development of the health resort business and tourism in the republic.

The goal of the "Izotopy" program is to step up research in the interests of biology, medicine, agriculture and other sectors. This program rests on the results of the experiments performed in the republic on obtaining highly enrighed stable isotopes of nitrogen, oxygen, carbon and other chemical elements.

The formation of educational scientific production associations on the initiative of the Tbilisi City Committee of the party became another form of the cooperation of forces. Two such associations--the Metallorezhushchiye stanki and the Elektrovozostroyeniye--are already in operation. Each of them contains more than 10 institutes, higher educational institutions, design bureaus and enterprises of union and republic subordination.

A very important consequence of the goal-directed programs is the appearance of scientific collectives which are aimed at the solution of major problems.

It is understandable that the combining of efforts is not enough for the success of the matter. A first-class research base, modern scientific equipment and highly skilled specialists who are able to operate it are also necessary. Here the creation of centers of the collective use of scientific instruments is the correct direction. Several such centers: mass spectrometry, electron microscopy of solids and X-ray analysis, spectroscopy of atomic magnetic resonance and others, are already in operation in the republics.

On the orders of related industries the centers make measurements and help all republic organizations, regardless of departmental subordination, in interpreting the obtained results. Experience attests that they completely justify themselves, making it possible not only to use the instruments considerably better, but also to ensure their highly skilled maintenance. Unfortunately, the aspiration of research organizations to acquire their own expensive instruments, even if there is no possibility of using them wisely, has still not been overcome. It seems expedient to specify the centers of the collective use of instruments as the main form of utilization of unique equipment and to give preference to them when allocating research instruments.

Steps are being taken in the republic to increase the design and production opportunities of scientific research organizations, first of all for the development and production of prototypes of instruments and tools, which have been executed on the level of inventions. Here, too, the tendency to cooperate is traced. A republic experimental design base has been set up on the basis on the Special Design Bureau of Scientific Instrument Making of the Georgian Academy of Sciences.

Nevertheless, the weakness of the experimental design subdivisions is still making itself felt, it is not always possible to bring an innovation up to the conditions necessary for placement into production. The construction of semi-industrial plants and pilot sections directly at enterprises might serve as a solution here. Thus, at the Georgian Polytechnic Institute they have found a means of producing solid alloys entirely without tungsten or ones containing it in small amounts. The production workers have seized this innovation. A pilot industrial section for the production of tungstenless alloys for draw plates, which are used in drawing pipe, has appeared at the Rustavi Metallurgical Plant. The life of the draw plates was increased 2.5-fold.

The scientists of the Institute of Physical and Organic Chemistry of the republic Academy of Sciences were able to demonstrate the possibility of the autoclave-hydrometallurgical processing of Madneul'sk copper ores and lean Chiatura manganese ores, which so far have gone to the dumps. With the participation of specialists of the institutes of physical and organic chemistry, inorganic chemistry and electrochemistry of the Georgian SSR Academy of Sciences, the Madneul'sk Mining and Concentration Combine, the State Planning and Scientific Research Institute of the Nickel, Cobalt and Tin Industry and the State Scientific Research and Design Institute of Alloys and Processing of Nonferrous Metals of the USSR Ministry of Nonferrous Metallurgy in 1979 this process was implemented at a pilot industrial plant of the Madneul'sk Combine.

The plant is a complete prototype of an industrial facility. It makes it possible to produce ultrafine copper powder and electrolytic manganese dioxide. The first results indicate their very high quality. The further improvement of the technological process for the purpose of extracting from the concentrates iron and other components, which are important to the national economy, is planned in the near future. This work has been entrusted to the Caucasus Institute of Mineral Raw Materials. In short, an important step has been taken in the direction of wasteless technology. The union ministries of nonferrous metallurgy and the chemical industry will have to deal with the industrial assimilation of the obtained results, and it is very important for them to help overcome the departmental attitude toward the matter, which has developed.

Georgian science is faced with a responsible task--the development of a republic automated system of national economic management as a unit of the statewide system. We are approaching its fulfillment stage by stage.

The "Rtveli" program has become one of the examples of the successful use of computer hardware in the national economy. Its goal is to optimize the methods of harvesting and transporting grapes. Scientists have pointed out the possibility of substantially shortening the period of the harvest campaign, of better using the portable equipment and capacities of wine-making plants and of obtaining a great economic impact.

Another condition of the management of scientific and technical progress is the formation of a centralized reserve of financial assets, which makes it possible to earmark allocations first of all for the most important research and development. The means for this are specified by the decree of the CPSU Central Committee and the USSR Council of Ministers on the further improvement of the economic mechanism. The creation of special funds, which stimulate the development of scientific organizations, will be of great importance.

It goes without saying that the search for new forms of the organization of research is complicated and requires the coordination of the interests of institutions and organizations of republic and union subordination. But its need is obvious. Of course, practice will show, which methods of the concentration of forces and assets justify themselves more and which ones less. However, it is clear that their verification and development create the conditions for the further improvement of the management of scientific and technical progress.

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PARTY CONTROL COMMITTEE FINDS FIRST DEPUTY MINISTER REMISS IN SUPERVISING R&D

Moscow SOTSIOLOGICHESKAYA INDUSTRIYA in Russian 7 Dec 79 p 2

/Article by Candidate of Technical Sciences V. Sevast'yanov, responsible controller of the Party Control Committee attached to the CPSU Central Committee: "By a Tortuous Route"/

> /Text/ Our science is providing production with more and more thoroughly useful developments. But they are not able everywhere to choose correctly the direction of research. The managers of some institutes are still making too little effort to improve the efficiency of the work of scientists and to increase their real return to the national economy. The main potential--people--at times is not utilized in the best way.

The All-Union State Scientific Research Institute of Construction Materials and Components is the main organization in its sector of industry. Kharlampiy Sergeyevich Vorob'yev has been managing it for the 10th year. For six years prior to this here he was the chief of a laboratory and deputy director for scientific work. An experienced engineer and scientist, Kharlampiy Sergeyevich has done much during his years of managing the collective.

As is known, a person's attitude toward a matter characterizes him. The achievements of the institute also became the achievements of the director. They noticed him and began to promote him. The prestige of Voro'byev as a manager and a scientist increased. He defended his dissertation and received the degree of doctor of technical sciences. They conferred on him the title of professor, appointed him a member of the Higher Certification Commission and elected him deputy chairman of the All-Union Chemical Society imeni D. I. Mendeleyev.

But time passed, and the production workers began at first quietly, and them more and more often and loudly to criticize the scientists and speak about the fact that the VNIIstrom /All-Union State Scientific Research Institute of Construction Materials and Components/ was solving its main tasks poorly. What happened?

It all began when the institute executives miscalculated in exploring the prospects.

Contrary to the decrees, scientific research work began to be planned on the basis of the current needs of individual works, without thorough generalizations and consideration of the long-range prospect of the development of the sector. Concentration on minor themes appeared, questions, which were of little urgency, but which made it possible to obtain apparent indicators of economic efficiency, began to be elaborated.

In recent times, for example, the institute carried out a number of scientific studies on the development of new materials and the improvement of technology and equipment. But among them we will not find any fundamentally new and original studies which could become the basis for the radical transformation of production. The proportion of scientific studies conducted by the institute on the most important themes of the national economic plan in the past three years has been reduced to a third. They now make up only 4 percent of the total amount of work. The unsound practice of adjusting the thematic plans and postponing the deadlines has taken root in the collective. In practice one out of three jobs is completed late, and some are carried over several times from one plan to another. As a result the periods of scientific research are dragged out and state assets are being spent inefficiently.

About 10 years ago, for example, the problem "The Comprehensive Development of Means of Manufacturing Equipment for Producing Cellular Concrete Items" was included in the thematic plan. It should have been completed in 1973. But the assignment was fulfilled only in 1977, and then only in part. And the conveyor line developed by the institute after testing was declared impractical. It is proposed to bring this equipment up to a "sensible" level during the next five-year plan and to introduce it even later.

For many years now the workers of the institute have been improving the process of drying brick. Several million rubles have been spent on this. However, the new dryers are not being adopted in production. Obsolete equipment is being incorporated in the plans of the construction of new brick plants and the renovation of operating ones.

And, on the other hand, when the managers of the VNIIstrom propose to construct enterprises which are designed to use the new equipment and technology developed at the institute, the matter at times ends in losses for the state. For 20 years the scientists worked on developing a technology of producing a binder from the waste products of the chemical industry--phosphogypsum and items made from it. More than 1 million rubles were spent on this theme. But none of the seven planned jobs has been completed and turned over to the departmental commission. In 1974 they began to build shops for the production of phosphogypsum, partition boards and gypsum sand brick in accordance with the developments of the institute at the Uvarovo Chemical Plant in Tambovskaya Oblast. But the construction of the enterprise has been delayed through the fault of the scientists. Many of their recommendations were unsound. The brick produced according to the new technology does not withstand cold and does not meet the requirements of the All-Union State Standard.

The technology of producing a new construction material--keramzit sand--has been under development at the institute for more than 15 years. Back during the Eighth Five-Year Plan an experimental plant for producing this material was built. It cost 2 million rubles. The enterprise proved to be inoperative. During the Ninth Five-Year Plan 360,000 rubles were allocated for its reconstruction. But this also did not provide positive results. Another 260,000 rubles have now been allocated from the budget. But due to errors of the researchers the industrial production of keramzit sand so far has not been assimilated.

Of course, negative research results occur in science, it is necessary to speak about them this bluntly. But the managers of the VNIIstrom at times lack the courage to do so. Without ensuring the solution of basic problems of the scientific and technical reequipment of the sector, they are creating the appearance of success and are striving for the artificial overstatement of the indicators of efficiency.

Such a procedure was frequently practiced. In 1975, for example, the institute proposed to substitute aluminum racks for brick drying for steel racks. This conventional rationalization proposal did not solve the scientific problems and basic questions of the development of new equipment. However, the managers of the collective decided to seize the opportunity to obtain an economic advantage. They organized at their pilot plant the flow line production of racks and began to sell them to enterprises. In this way they obtained an economic impact of 400,000 rubles.

In pursuit of favorable indicators the managers of the institute also allowed outright additions. Amounts from fictitious data were included in the reports. For example, an economic impact of 324,000 rubles from the renovation of the shaft furnace at the Korenevo Construction Materials Plant (Moscow Oblast) appears in them. In reality this enterprise did not make any profit.

In violation of established procedure they began to calculate the efficiency, as a rule, not according to the actual, really achieved economy, but by adding up the anticipated, hypothetical impact. The staff members ventured subjective and arbitrary estimates of the efficiency, while the managers confirmed these calculations, although they did know that the figures were taken "out of the blue." Of the 23 subdivisions of the institute only 8 divisions and laboratories are operating with some efficiency, while the remainder are not providing a real return.

The unobjective approach to the evaluation of the results of its own research and the exaggeration of the ostentatious and formal aspect of the matter, when any new development, regardless of its real significance, is accompanied by sensational publicity, have become the typical style of the administrative leadership.

But, after all, a party organization, communists and a collective, which should have directed attention to the strange procedures and methods of work, are present here. But they did not. The collective quietly proceeded in this direction. And in order to understand how the present moral climate here formed, it is necessary to turn to several cases of the recent past.

Having worked several years at the post of director and having consolidated his position, Vorob'yev began, let us state frankly, to become conceited and was intolerant toward the opinion and criticism of others. His administrative voice sounded more and more strongly than his scientific voice. For this reason the chief of laboratories, Candidate of Technical Sciences Monastyrev, was forced to leave the institute. Candidate of Technical Sciences Nikitin followed him for the same reason. Finally, deputy director for scientific work, Candidate of Technical Sciences Matyanin, was dismissed from the institute.

At the same time Vorob'yev took under his wing the director of the drying laboratory Buz, who attempted to discredit Matyanin and other staff members, who had advanced very advanced technical ideas. Buz himself had not made a single scientifically sound proposal. The result of the organized petty intrigue is that industry so far does not have a modern drying technology.

Some executives of the USSR Ministry of the Construction Materials Industry also deserve reproach. First of all there are First Deputy Minister A. Boldyrev and Chief of the Technical Administration V. Dobuzhinskiy, who are directly responsible for the development of science and technology in the sector. In spite of the serious deficiencies in the activity of the institute, the ministry gave a favorable rating to its work in the balance commissions. Of course, this was of little use to the collective and its management.

The Party Control Committee attached to the CPSU Central Committee discovered serious deficiencies in the work of the institute and sternly criticized it. Communist Vorob'yev was held accountable to the party for the unsatisfactory fulfillment of the instructions of the party and the government on increasing the efficiency of scientific research work. The committee directed the attention of the ministry to the fact that it has not taken the proper steps to improve the activity of the institute. The state of affairs here should be corrected. But, it seems, it is useful for the workers of other scientific research institutions and the executives of ministries and departments to know the errors of this collective. For the choice of a strategy in science is a very great and important task for all scientific organizations.

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PARTY CONTROL COMMITTEE INTERVENES TO CORRECT FAULTS IN MINISTRY'S RESEARCH INSTITUTE

Riga SOVETSKAYA LATVIYA in Russian 20 Nov 79 p 2

/Article by O. Kostenko, chief of the Light, Food and Fish Industry Department of the Latvian SSR Committee of People's Control: "It All Began With a Letter"/

/Text/ A letter from Riga arrived at the USSR Committee of People's Control. Its author, Candidate of Technical Sciences and Chief of the Sector of Automatic Equipment of the Latvian Scientific Research Institute of Light Industry V. Petrov, wrote about serious shortcomings in the work of the institute. He reported that before appealing to the Committee of People's Control he had spoken more than once to the managers of the institute about the shortcomings and had informed the union Ministry of Light Industry. Unfortunately, no steps were taken.

V. Petrov's letter was forwarded from Moscow to the Latvian SSR Committee of People's Control. Of course, it required a careful check. We rarely have occasion to deal with scientific research institutes. It was very important to select an authoritative, competent commission and to define precisely the tasks of the checkers.

We invited leading specialists of the Latvian SSR Academy of Sciences, scientific research institutes, central design bureaus, which are located in the republic, and the Latvian Administration of the State Committee for Standards--seven people in all--to take part in the check. Candidate of Chemical Sciences L. Yeremeyev, an inspector of the committee who is not on the staff and the chief of a department of the Institute of Organic Synthesis of the Latvian SSR Academy of Sciences, headed the commission.

At the Scientific Research Institute of Light Industry they quickly guessed whose signature was on the letter, the content of which the commission intended to verify. This attested that V. Petrov had acted, as they say, with openness and did not conceal his indignation at the shortcomings. However, the managers of the institute by no means shared the opinion of the author of the letter and claimed that there were no significant oversights and that the commission was only wasting time.

In spite of such assurances, the commission set to work according to the outlined plan. The check confirmed the correctness of the majority of facts set forth in the letter. With good reason it was possible to draw the conclusion that the institute did not have an appreciable influence on the technical and economic indicators of the knitted wear sector.

The developments of the institute, as a rule, are adopted at only one or two enterprises, while many completed jobs are not used at all in practice. During the past five-year plan 22 developments, which cost the state 800,000 rubles, were not introduced in production. During the present five-year plan the situation has not improved. The thematic plans are overloaded with minor themes, at the same time in them there are no efforts aimed at increasing labor productivity. The economic impact from the introduction of some developments is very negligible, while in some cases it does not even cover the production costs, and this is especially typical of the leading laboratories of the scientific research institute.

The materials of the check were discussed at the meeting of the Committee of People's Control, to which we invited Institute Director P. Biryulin, Assistant Director for Scientific Work T. El'kina and the author of the letter, V. Petrov.

It should be noted that Institute Director P. Biryulin, at times contrary to the obvious facts, at the meeting of the committee stubbornly defended his favorable rating of the work of the scientific research institute and categorically objected to some conclusions of the commission. We, of course, were convinced of our correctness, but on the instructions of the committee appealed to the republic Central Statistical Administration, which confirmed the data of the commission about the fact that the managers of the institute had incorrectly included 68 jobs in the statistical report for 1975-1978 without certificates and other documents attesting to the introduction of these jobs.

The Latvian SSR Committee of People's Control issued reprimands to P. Biryulin for the failure to take effective steps to increase the efficiency of the work of the institute and for violation of the procedure of planning and reporting and to T. El'kina for shortcomings in the organization of scientific research work.

Moreover, the committee sent the appropriate letter and the materials of the check to the USSR Minister of Light Industry. And now we have received the rely of the minister and an excerpt from the decision of the collegium of the ministry on the matter of the activity of the Latvian Scientific Research Institute of Light Industry. As is evident from these documents, specific measures on the improvement of the work of the institute, the giving of assistance to it, the increase of the efficiency of scientific developments, the expansion and acceleration of their adoption in production, the decrease of themes of little urgency and so forth have been planned.

We believe that the large amount of work done since V. Petrov's letter--the thorough check, the examination of the materials at the meeting of the republic Committee of People's Control and in the collegium of the USSR Ministry of Light Industry--will promote the improvement of the state of affairs at the scientific research institute and will increase its influence on production and the technical and economic indicators of the knitted wear sector.

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WESTERN SCIENTIFIC CENTER SEEKS NEW WAYS TO IMPROVE R&D COOPERATION WITH INDUSTRY

Moscow RABOCHAYA GAZETA in Russian 2 Feb 80 p 3

[Article (RATAU): "Increase the Return of Scientific Research"]

[Text] In the solution of the urgent problems facing the national economy, Comrade L. I. Brezhnev stressed in a speech at the November (1979) CPSU Central Committee Plenum, the party is counting on the effective assistance of scientists--of the USSR Academy of Sciences, republic and sectorial academies and all scientific research institutes. The tasks of the collectives of research institutions on expediting scientific and technical progress in the region and increasing the effectiveness and practical return of scientific research and the ways of strengthening the ties of science and production were discussed at the expanded meeting of the council of the Western Scientific Center of the republic Academy of Sciences, which was held in L'vov.

Candidate Member of the Politburo of the Central Committee of the Communist Party of the Ukraine and First Secretary of the L'vovskaya Oblast Party Committee V. F. Dobrik opened the meeting.

The directions of the research of the detachment of 12,000 scientists were revealed in the report of Chairman of the Western Scientific Center of the Ukrainian SSR Academy of Sciences and Academician of the Ukrainian SSR Academy of Sciences Ya. S. Podstrigach. Scientific collectives, he noted, are successfully developing research in the field of mathematics, mechanics and materials technology, are developing advanced methods of prospecting and the mining of minerals and are persistently seeking means of effective product quality control and the intensification of agricultural production.

The new organizational forms of the cooperation of scientists and experienced workers are indebted for their appearance to the Western Center, which has set up close contacts with production. Interdepartmental special-purpose scientific research associations, which operate on a contractual basis, have been set up in this region. Intersectorial scientific production complexes, which solve urgent problems of technical progress on the basis of comprehensive planning of developments--from the scientific idea to its practical implementation--have been formed on their basis. This substantially reduces the period of adoption of inventions, gives stability to the integration of science and production and significantly increases the effectiveness of research. Last year alone the total economic impact from the implementation of the work of the collectives of the interdepartmental complexes exceeded 40 million rubles.

As an example, which characterizes the advantages of the new form of the alliance of science and practice, Ya. S. Podstrigach cited the development of an ultrastrong block matrix for the synthesis of diamonds. Only a quarter was needed to place it into production at the L'vov Plant of Synthetic Diamonds and Diamond Tools, and now it will annually ensure here an economy in the amount of 200,000 rubles. Now the introduction of the innovation at all the enterprises of the All-Union Soyuzalmazinstrument Association is being planned.

Candidate Member of the Politburo and Secretary of the Central Committee of the Communist Party of the Ukraine Ya. P. Pogrebnyak spoke at the meeting of the council. Having analyzed the experience of the republic Academy of Sciences in strengthening the contact of science with production, he noted the important role which is being played in this important matter by the academic scientific centers, which have become a reliable support of the party committees in the drive for scientific and technical progress.

This can be seen especially well, he emphasized, from the example of the Western Scientific Center of the Ukrainian SSR Academy of Sciences. The associations and complexes, which were set up here with the support of the L'vovskaya Oblast Party Committee and have strengthened the cooperation of scientific and production collectives, are a qualitatively new stage in its development. Such cooperation provides more favorable conditions for the introduction of scientific developments in practice and helps production workers to solve comprehensively and on the most modern scientific level the fundamental problems of the development of the enterprises. Such close cooperation of science and practice not only does not interfere with basic research, but in a number of instances is conducive to its intensification and development.

Further Ya. P. Pogrebnyak dwelled on the primary tasks of the development of the economy of the region as an important link of the economic complex of the republic, in the solution of which an enormous role is assigned to scientists. They are the questions of increasing labor productivity and further developing machine building and the problems of the protection and rational use of natural resources. The supplementing of the fuel and power resources, it was emphasized in the speech, is assuming particular urgency. More purposeful geological exploration on the basis of thoroughly sound scientific forecasts should be conducted in the Carpathians, which are the richest store of various minerals. Advanced geophysical and geochemical methods, space and airborne high-altitude equipment must be used extensively for this. The Volynskaya, Ivano-Frankovskaya and Zakarpatskaya oblast party committees, relying on the primary party organizations, need to take effective steps to step up this work.

Questions of the more complete, comprehensive use of raw materials and the reduction of the metal-output ratio of machinery and equipment, the search for and introduction of new materials--metal substitutes, which are able to operate reliably in corrosive environments--also require the serious attention of scientists. A no less important task is the increase of the quality of equipment, first of all agricultural equipment. The collectives of the Ternopol' Combine Plant and the L'vovkhimsel'khozmash Production Association, as well as the enterprises of the food industry, for example, need the effective assistance of researchers. The rural workers expect from the scientists of the center proposals which are conducive to the further increase of the fertility of the soil and the yield of grain crops, the intensification of the sectors of livestock breeding and their conversion to an industrial basis.

At present, Ya. P. Pogrebnyak said in conclusion, active work is being caried out in the country on compiling the plans for the forthcoming five-year plan. Right now it is especially important to determine the leading directions of scientific and technical progress for each sector and for each enterprise. Right now the scientific and technical programs, which are aimed at the solution of national economic problems, should be formulated.

President of the Ukrainian SSR Academy of Sciences Academician B. Ye. Paton, who spoke at the meeting, noted that the successful solution of the tasks set by the 25th CPSU Congress is directly connected with the further development of science and technology and the extensive use of the latest scientific achievements in the national economy. The scientists of the republic Academy of Sciences are making a worthy contribution to the acceleration of scientific and technical progress.

After dwelling in detail on the gains made by the scientists of the western region, the speaker focused attention on the reserves for increasing the effectiveness of research and on the directions of research, which it is necessary to develop first of all.

The performance of basic research and the development on its basis of fundamentally new technologies, which can make radical changes in entire sectors of industry, he emphasized, are now the most important task of science and the academic institutions. The institutions of the center also need to begin serious work on the development of such technologies. For this it is necessary to utilize more completely the advantages of the comprehensive goal principle of planning, providing first of all for the fulfillment of major scientific programs on the basic problems of natural science, and to increase in every possible way the scope of the introduction of developments in the national economy.

The even closer combining of the efforts of scientists and production workers, the provision of scientific institutions with modern research equipment and the setting up of collective-use computer centers are needed to solve these problems. It is necessary to attract more extensively the assets of interested ministries and departments and to set up the production of unique instruments at the institutes themselves. It is also necessary to devote much attention to the training of highly skilled scientific personnel, first of all doctors of sciences, and to the improvement of the management of the work of the collectives.

The important role of the Western Center in the system of scientific centers of the Ukrainian SSR Academy of Sciences, B. Ye. Paton noted in conclusion, obliges the collectives of researchers to step up the work on the search for new forms of the relationship of science with production, to utilize more completely the opportunities and reserves and to adopt in practice a precise system of control over the implementation of adopted decisions.

President of the USSR Academy of Sciences Academician A. P. Aleksandrov devoted his speech to the strategy of expediting scientific and technical progress in the country. Now, as never before, he said, the joint work of science and industry is extremely urgent. During the first years of Soviet power V. I. Lenin emphasized this detail as an important condition of the successful development of the new economy, noting that our industry should be based on our own science, our own technology and our own raw materials. A large number of institutes, which played an invaluable role in the training of specialists and in solving cardinal problems of the development of the national economy of the country, had already been opened at that time. Lenin's demand has not lost its significance even today. For only if we ourselves create the technology and modern equipment and develop scientific concepts in various fields of knowledge, will it be possible to ensure the leading positions of domestic science in the world. As an example of this approach to the organization of work the president of the USSR Academy of Sciences cited the Institute of Electric Welding imeni Ye. O. Paton of the Ukrainian SSR Academy of Sciences, which is headed by Academician B. Ye. Paton. The latest methods of welding and electrometallurgical technological processes, which have received wide recognition abroad, were developed at this institution. The efforts of Soviet scientists on developing nuclear power engineering were just as successful.

The close contact of scientists with production workers and the constant search for new forms of the integration of science and practice, which is being carried out especially successfully at the institutions of the Academy of Sciences of the Ukraine, the speaker said further, are promoting the quickest possible introduction of these and other developments. The experience of the Western Scientific Center, in particular, merits a high rating and extensive dissemination. The close combining of the efforts of the collectives of researchers and experienced workers, which belong to the special-purpose interdepartmental scientific production complexes which were set up here, enables the scientists to sense constantly the needs of production, to solve effectively the problems which arise and to implement scientific ideas as soon as possible.

Then A. P. Aleksandrov named the most important directions of scientific research and the sectors of the national economy, which require the close attention of research collectives. He especially singled out the urgency of the development of the work on the creation of modern computer hardware, instruments and other tools and stressed the need for the judicious combination of basic and applied research.

In their speeches Chief Engineer of the Kalush Khlorvinil Production Association of Ivano-Frankovskaya Oblast N. V. Khaber, Secretary of the Party Committee of L'vov Polytechnical Institute V. M. Tokar', Rector of Chernovtsy State University K. A. Chervinskiy, Prorector of Uzhgorod State University S. M. Kishko, Secretary of the Party Committee of the Lutsk Electrical Equipment Plant S. I. Udal'tsova, Rector of the Ukrainian Institute of Water Resource Engineers (Rovno) S. T. Voznyuk and General Director of the Ternopol' Vatra Production Association R. D. Yaremchuk spoke about the ways of increasing the effectiveness of science and the importance of the close cooperation of scientists and production workers for expediting technical progress. They cited specific examples of the high return of the alliance of researchers and experienced workers and made proposals on the further consolidation of this integration.

The joint socialist obligations of scientists and production workers of the region for 1980 were adopted at the expanded meeting of the council.

The secretaries of the oblast party committees of the western oblasts of the republic and Chief of the Science and Educational Institutions Department of the Central Committee of the Communist Party of the Ukraine F. M. Rudich took part in the meeting.

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PLAN TO INCREASE INCENTIVES FOR INTRODUCING NEW TECHNOLOGY OUTLINED

Yerevan KOMMUNIST in Russian 5 Dec 79 p 2

/Article by Yu. Akopyan, senior scientific staff member of the Armenian Affiliate of the Scientific Research Institute of Planning and Norms attached to USSR Gosplan: "The Goal Is to Expedite the Introduction"/

/Text/ Today it is clear to everyone: you cannot live without the constant updating of production. But the desire alone to update the assortment of the products being produced is not enough, an economic estimate is also necessary. But, as a rule, it has shown: the assimilation and mass production of new, highly efficiency equipment and modern items entail additional costs. And at times it is simply not profitable for the enterprise--it can entail a decrease of the production volume. As a result of this situation the process of introducing scientific and technical achievements in the national economy has begun to slow down. Often the new developments, which correspond in their technical and economic parameters to the best domestic and foreign models, have spent so much time making their way in the world, that by the time they are assimilated they have become obsolete. Here are figures which graphically demonstrate the inadequate rate of the updating of the products being produced: the proportion of new products in republic machine building last year was only 6 percent of the total volume, while products which have been produced for more than 10 years make up 35 percent.

The decree of the CPSU Central Committee and the USSR Council of Ministers, "On the Improvement of Planning and the Intensification of the Influence of the Economic Mechanism on the Increase of Production Efficiency and Work Quality," is aimed at the elimination of the noted discrepancies and the increase of the interest of labor collectives in introducing advanced equipment. But why was a fundamentally new approach needed? For back in 1960 a centralized fund for the assimilation of new equipment was set up by means of deductions from the production cost of the products being produced for the purpose of offsetting the increased costs in the output of new products of machine building and metalworking. The assets from the fund were allocated to industrial organizations which had the assimilation of new equipment in their plans. But the point is that in most cases the financing was made after the completion of the work and not in the full amount. As a result the enterprises bore considerable losses due to the low profitability or even the unprofitability of the output of the new products. But the strict centralization and established procedure of distributing the fund of assimilation to a considerable extent undermined the principles of cost accounting. It turned out that the organizations producing obsolete products contributed to the fund less capital than the enterprises which produced products which conform in their technical level to the best domestic and foreign models.

In place of the fund of assimilation the decree provides for the changeover to the formation of a unified fund for the development of science and technology for the financing of scientific research, experimental design and technological operations, as well as the reimbursement of the expenses connected with the development and assimilation of new types of products. Here, in order to finance especially important scientific research, which is of national economic importance and requires major expenditures, assets of the State Budget can also be used along with the assets of the unified fund for the development of science and technology.

At the same time the ministries are allowed to partly decentralize the assets of the unified fund for the development of science and technology with their further transfer to the control of all-union and republic industrial associations, which will unquestionably increase the responsibility of local organizations for the output of the most up-to-date products.

In order to eliminate arising financial difficulties USSR Gosbank and the USSR All-Union Bank for Financing Capital Investments will grant the enterprises, which are putting new items into production, credits for the payment for operations which are being financed by assets of the unified fund, if the indicated operations are performed in a shorter period than specified by the plan.

An important role in the economic stimulation of the increase of the standards of production and the mass output of products at the level of the best models is assigned to pricing. Although some elements of the comprehensive approach, which is stipulated by the new decree, are in effect in current practice, they were not elaborated and coordinated enough, as a result of which the assimilation and expansion of the output of highly efficient products were hampered or inadequately stimulated.

At present precise limits and amounts of the application of markups and discounts on wholesale prices have been specified subject to the economic impact, the scientific and technical novelty and the quality of the products being produced. For example, the incentive markup on the wholesale price of products for production and technical purposes, which correspond in their parameters to the best domestic and foreign models, depending on the annual economic impact is set in the amount of 0.5 to 1.5 times the standard of profitability, which was used when determining the prices for the given or a similar group of items, but not more than 70 percent of the amount of the indicated impact. In this case the markup on the wholesale price is set for a period of up to one year, and for products of particular complexity--up to two years. When the State Seal of Quality is awarded to an item during this period, the effect of the indicated markup is extended without a change in its amount. At the same time the markup on products, which have been put into production on the basis of developments recognized as discoveries or inventions, is increased 1.5-fold.

The complexity of the pricing system consists in the fact that along with the economic stimulation of the best work it also provides for effective financial sanctions for the production of obsolete items. For example, for a product of the second quality category which has not been certified in time a price discount in the amount of 50 percent of the amount of profit obtained from the sale of this product will be applied, while upon expiration of the period for the discontinuation of a product of the second quality category the wholesale price discount is set in the amount of the total profit.

The amount of the indicated markups and discounts on the wholesale prices will not be taken into account in the production plan, but then during the overall assessment of the fulfillment of the plan the corresponding amount will either be added or subtracted. As a result, the enterprises producing products of the highest quality will obtain an opportunity due to the markup to considerably exceed the set plan and to contribute additional assets to the economic stimulation fund. This is also promoted by the provision of the decree, according to which 70 percent of the profit obtained as a result of the application of wholesale price markups for high quality products should be channeled into the economic stimulation fund of production associations, while the remainder should be distributed between the unified fund for the development of science and technology and the State Budget.

Enterprises producing obsolete products even in the case of overfulfillment of the plan will be faced with the fact of the nonfulfillment of the plans of the main technical and economic indicators with all the negative consequences which stem from this.

The measures outlined in the decree on the economic stimulation of scientific and technical progress, the assimilation of the production and the increase of the output of high quality new items will unquestionalbly be a mighty stimulus, which induces enterprises to regularly update the products being produced.

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SCIENTISTS DISCUSS PROBLEM OF MANAGERS' RELUCTANCE TO INTRODUCE NEW TECHNOLOGY AND SUGGEST SOLUTIONS

Yerevan KOMMUNIST in Russian 13 Oct 79 p 2

/Discussion between Candidate of Technical Sciences Vilen Vramovich Aleksandryan, docent and director of the Scientific Research Institute of Water Problems and Hydrotechnics of the Ministry of Land Reclamation and Water Resources, and Doctor of Technical Sciences Professor Nikolay Vaganovich Manukyan, head of the Department of Technology of Construction Materials of the Yerevan Polytechnical Institute imeni K. Marx, recorded by S. Geoletsyan: "Go to the End"/

/Text/ The present stage of the building of communism is characterized by the dynamic development of the economy. The main ways of further improving the economic mechanism were specified by the 25th party congress and the subsequent CPSU Central Committee plena. The decree of the CPSU Central Committee and the USSR Council of Ministers, "On the Improvement of Planning and the Intensification of the Influence of the Economic Mechanism on the Increase of Production Efficiency and Work Quality," was an important step in their realization.

In order to provide production more rapidly with new equipment and technology and to increase its technical level, a task was set, according to which the production plan and the capital construction plan should be based on the plan of scientific and technical progress and should become its continuation, its materialization in products and fixed captial.

The production, scientific and technical potential of our republic is increasing from five-year plan to five-year plan. Under these conditions the role of the scientist in the scientific and technical revolution and the fate of the scientific development are acquiring especially great importance. Where and at what stage can the researcher feel free of his "creation," or should he go to the end and introduce the development in life? This problem is examined in the dialog of two scientists--Candidate of Technical Sciences Docent Vilen Vramovich Aleksandryan, director of the Scientific Research Institute of Water Problems and Hydrotechnics of the Ministry of Land Reclamation and Water Resources, and Doctor of Technical Sciences Professor Nikolay Vaganovich Manukyan, head of the Department of Technology of Construction Materials of the Yerevan Polytechnical Institute imeni K. Marx.

Aleksandryan. Should the scientist bear the responsibility for the introduction of the results of his research to the end--during the entire process from the completion of the research to the final introduction of its results in production? If we divert our attention from specific examples, this question is complicated and here an unequivocal answer is hardly relevant. Some scientists, taking into account the considerable difficulties which at times stand in the way of the introduction of their developments, prefer, as they say, not to waste time "in vain," but to devote it to new research and to the confirmation of new ideas. But it is well known that a scientist succeeds in making major scientific achievements infrequently, at times once in a lifetime. So, taking this circumstance into account, he probably should not give up his creation halfway, but should watch over it to the end. But a complication arises, the so-called psychological factor comes into play--it is hard for a person to reconcile himself to the idea that his effort, perhaps the last one, is a "swan song."

It will always seem that he will still discover and study many things. There are also difficulties of another order. Much time, which is calculated at times in years, is spent on drawing up various documents and on conducting tests of different types. In spite of the fact that in our country much attention is devoted to the use of the achievements of science and technology in production, still the introduction of the new does not take place without a struggle, no matter how trivial this phrase may sound. There are often instances when it is necessary "to break a lance" in different departments, to take into account or to adapt oneself to various instructions, to take into consideration a large number of documents which specify the testing process and the periods, which at times are very substantial. But the scientist, even as much as he would like, does not have that much time. He has his own plan--a plan of scientific research, which he is often obliged to fulfill in a very short time.

Manukyan. Should the scientist go to the end? It is a debatable question. Let us recall the synonyms of the word "introduce." Drive in, hammer in.... Is it worthwhile to tear away high-paid, "expensive" specialists from their immediate work for a year, two years or else more, so that he could devote himself to a group of duties, which is unusual for him? Why should a professor check how piles are being driven? This is already a matter of technology. If a theoretician substantiated the solution of a chess gas, the victory is a matter of technology.

And all the same I believe that the scientist, the laboratory, the group must not avoid the introduction of their developments. Researchers should give the utmost assistance in the implementation of their developments. I had occasion to work many years at a plant--I am well acquainted with engineering practice and contend that scientific research institutes cannot take into account the large number of engineering and technological nuances. And therefore, when the introduction of a development on an industrial scale is begun, both sides are confronted with great difficulties. The engineering and technical personnel of a plant are not able to solve them alone. The developers should do this.

As to the certainty of the need for a development, this is truly problem number one. It is necessary to persuade, and often without results, the nonspecialist managers of the benefit of some invention or innovation. Scientists spend precious hours on persuasion and demonstration.

Let us take, for example, the following case. In spite of the fact that the country produces an enormous amount of steel and pig iron, the most urgent task of the economical and efficient use of metals and other materials has now been set. The problem of using new materials--metallic, polymer, glass ceramic (devitrified glasses) and others--cannot be put off. For example, the motor vehicle. It worked for the expected time--and is used for scrap, is that not so? But do you know how many parts in it wear out and fail? Of the 500 descriptions of parts only 10-15. But because of this the motor vehicle "dies." This is wrong. It is necessary to use parts (materials) with the same life. A wide range of such materials already exists. Our laboratory is dealing, in particular, with this. But how many years were needed to convince some managerial comrades of the rationality of the use of powder metallurgy? Ten, if not more.

Aleksandryan. There are also other, no less important problems. For example, when the developments are recognized as necessary for the national economy, but the material and technical supply, which is sufficient for their implementation, does not exist. The idea is as if ahead of the times. Thus, the advanced method of drip irrigation, taking into account the water shortage of the republic, is a vital issue of today's agenda. This method makes it possible to save one-third to one-half of the irrigation water, to increase the yield and to raise labor productivity, but it is being introduced slowly due to the shortage of equipment and some type sizes of pipe. Or another thing. The problem of the mechanization and automation of watering is becoming very urgent in the republic. There are machines, units and other means of watering, which are designed for flatland conditions and are not suitable for the complicated topographical and soil conditions, for which our republic is notable. Unfortunately, at present there is no sufficiently efficient mobile equipment for mechanizing watering on steep slopes either in our country or aborad. Research on tailoring the existing machinery for its introduction on slopes is necessary. But what can we earnestly speak about, when the already approved machines are being introduced slowly even under flatland conditions? Why? Because in the republic there is not a single specialist in the mechanization and automation of water reclamation operations and watering in particular. Who should deal with these questions? Our institution is helping farms with what it can. But scientists are not able to completely replace production workers. But without personnel this important matter will make not progress. Right today the higher and secondary specialized educational institutions of the republic need to train specialists of the intermediate and higher level in this field. We must not be late in training scientists--candidates and doctors of sciences.

Manukyan. There are also other difficulties with introduction. Let us assume that a scientific development is accepted for introduction at an enterprise. Does everything go smoothly, without a hitch? No. Often the managers of plants and factories simply do not want to introduce new equipment. After all, courage, knowledge, a material and technical base and the conversion of the processing method are also necessary here. "But why," the manager thinks, "do I need this, to 'have a headache'?"

Of course, researchers are not always able to develop the new technology exactly, to bring the new material up to the requirement. It is quite natural that complications may arise at the works. But this does not mean that you have to throw out the baby with the water and reject a new design or processing method. Follow-ups are necessary. Joint ones--by the engineering forces of the enterprise and the scientists of the scientific collective. Or else we bring the solution of a problem, ideas to the plant, but they say to us--"it does not work," "it is no use," and they "ruin" a useful innovation.

Aleksandryan. Yes, this often happens. But if some device is produced, at times due to poor quality the new item is unmarketable, the idea placed at the basis of the development is thereby discredited.

Manukyan. Now the introduction of new equipment and materials is recorded in the plan for enterprises and organizations. But even here some enterprises contrive with all their might to escape them. For example, the output of cermet parts for motor vehicles is called for at the YerAZ Production Association. But the plant managers on various pretexts are delaying their production. And here is an eloquent example from the Spitak Elevator Building Plant. On the order of the minister of the sector the plant should have set up the production of cermet parts. Our department selected the list of parts (15-20 descriptions), developed the technology of their production, drew up a plan of the shop and helped in the production of test batches, which were tested on elevators. But the new management of the plant, without explaining the reasons, eliminated the shop, reorganized the building for another works, ignoring the fact that enormous amounts of state capital had been spent.

What should the scientist do? Go from instance to instance, argue, show proof....

Aleksandryan. In our field we are also confronted with such phenomena. But here it may even be a matter not so much of the unwillingness of economic managers to introduce as of the arisen objective situation. For example, we have developments which could promote the improvement of the operation of irrigation systems. They are the so-called water outlet-arrest-gate, the killer of the energy of the stream, the divider of the consumption of water between different users, the regulator of water consumption and others, for the final refinement of which experimental design studies are necessary. But the lack of a special design organization at the institute and in the republic is having the result that much time and effort are being spent on overcoming the still existing departmental barriers to the performance of the work at other organizations. /Consequently, for the good of the matter it is necessary to organize a special design bureau with its own pilot works either at the Institute of Water Problems and Hydrotechnics or at another related organization/ /in boldface/.

For fairness' sake it must be noted that when enterprises are directly interested in a scientific development, they accept it with pleasure.

Manukyan. Yes, interest means a lot. And so does understanding the need for an alliance with scientists. I will explain with an example. As is known, light industry has now begun to be developed extensively. In fact this is an extremely "heavy" industry, in which modern looms and spinning machines with the most complicated kinematics and speeds are used. Many parts wear out quickly and fail, in connection with which breaks of the yarn and thread occur, which leads to the disruption of smooth operation. We applied to the Armenian SSR Minister of Light Industry for the creation in their system of a sector of powder metallurgy and a section for the production of cermet parts for the machines of light industry enterprises. Minister Comrade A. Gevorkyan supported this recommendation. A sector was created, a works was set up, and the acute shortage of parts is being completely covered by the production of the section. Moreover, new materials for rapidly wearing parts of machines have been developed. Their durability has been increased 5- to 10-fold. This is an example when scientists were not confronted with bureaucratism, but, on the contrary, met with understanding and efficiency.

Aleksandryan. So, let us summarize our thoughts. The scientist and the scientific worker, of course, should not confine themselves to research, but they certainly need help.

Manukyan. It seems to me that in order for misunderstandings with enterprises not to arise, /the scientists or the managers of the organizations, at which they work, should send to the planning organs or management organs of the republic brief annotations on the completed scientific research operations, the results of which have been tested on a pilot industrial scale. The superior organizations should review them and in accordance with established procedure make a decision--where to introduce them, with an indication of the deadlines and means, while the scientists (organizations) will carry out supervision as the author/ /in boldface/.

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'INDIFFERENCE' OF MINISTRIES FRUSTRATES INSTITUTE'S EFFORTS TO INTRODUCE NEW TECHNOLOGY

Yerevan KOMMUNIST in Russian 8 Jan 80 p 2

/Article by A. Arakelyan and L. Grigorova: "The Tactic of Inertia, or How They Resign Themselves to the Slow Introduction of Scientific Developments at the Scientific Research Institute of Rock and Silicates and the Ministry of the Construction Materials Industry"/

/Text/ Among the scientific research institutions of the republic the Scientific Research Institute of Rock and Silicates was predestined as if by nature itself to gain a special, leading position. It is not by chance that through sectorial subordination on a national scale the institute was formed as the chief institute in a number of directions of the study of the extraction, processing and introduction in the national economy of rock and its derivatives.

The activity of the institute is multidimensional, the yield is diverse. The institute gained considerable popularity, having set to work on the problem of processing perlite, in recent times the devitrified glasses have declared themselves more and more loudly. A considerable share of the labor has been devoted to the mechanization of the quarrying industry, the improvement of technology and stone processing machines. The search for raw materials for the glass industry is also on the credit side of the institute. The geography of creative contacts is also extensive. Since 1979 the main theme on perlite raw materials has been attached to the Scientific Research Institute of Rock and Silicates by the USSR State Committee for Construction Affairs, in connection with which it is quarrying zones of Transcaucasia and the Northern Caucasus, Central Asia, the Buryatskaya ASSR and Siberia. The collective of the institute has direct contacts through economic contracts with Uzbekistan and Moldavia and is cooperating creatively with Estonia, the Ukraine and CEMA countries.

It would seem that nothing is interfering with the flourishing of the institute and the solution of creative problems on a high level. But it only seems so.... /In fact all the best achievements come with a struggle, with great difficulties, which with an objective approach to the matter might not have existed/ /in boldface/.

Let us turn to the plans of the introduction of new equipment for the Ministry of the Construction Materials Industry for the past few years. As a rule, three or four assignments fall to the Scientific Research Institute of Rock and Silicates, including here studies on the introduction of the scientific organization of labor and standard plans, the organization of production, the norm setting of labor, that is, the items which belonged to the abolished Orgtekhstroy Trust.

At the institute they grumble: "Why do we have such a workload? Let us deal with science in peace!" That is reasonable. But the opposite argument is also justified: "Additional staff and finances have been allocated to the institute for this. And this work is necessary."

Obviously, /a third thing is the heart of the matter: the lack of efficiency of the management of all the subdivisions of the institute on the part of both the board of directors and the appropriate departments of the ministry/ /in boldface/. After going over the items of the above-mentioned plans of technical innovations and asking the question, what has been introduced during the last two five-year plans, it turns out that the results are far from splendid. The attempts to analyze the arisen situation with Institute Director G. Kanetsyan and his deputy for introduction, M. Badalyan, in one instance come up against the reluctance "to wash dirty linen in public" and in the other against the assertions that the ministry is not interested in the affairs of the institute. But the meetings with Deputy Minister G. Minasyan and Chief of the Technical Department L. Khachatryan showed that in the ministry they treat the creative potentials of the institute with condescending skepticism.

But where is the golden mean, that is, the realistic appraisal of affairs? It can briefly be formulated as follows: /the Scientific Research Institute of Rock and Silicates is giving extremely inadequate assistance to the enterprises and organizations of the Ministry of the Construction Materials Industry in fulfilling the assignments on the introduction of new equipment and advanced technology, the reequipment and modernization of production, the increase of the quality of the products being produced/ /in boldface/. The institute is unsatisfactorily fulfilling the decree of the CPSU Central Committee and the USSR Council of Ministers of 24 September 1968, "On Measures to Increase the Efficiency of the Work of Scientific Organizations and to Expedite the Use of the Achievements of Science and Technology in the National Economy."

Let us see how developments proceed in the leading laboratories of the institute. Two main directions were the basis for the activity of the laboratory of intumescent perlite: the study of the mining of perlite deposits and the obtaining of items made from perlite. It has been proven that the perlite reserves in the republic are large (we are deliberately not using the questionable appraisal "inexhaustible"), as well as that the perlites of Armenia have a high coefficient of intumescence. The materials and items obtained on their basis have high technical and economic indicators. Of course, the problem of perlite was examined precisely from this point of view by the planning and directive organs. In particular, the institute took upon itself the thematic projects in progress for a large number of new materials which can be obtained on the basis of perlite.

At one time much was said and written about the excellent qualities of perlite fiber glass material, cellular block and other derivatives of perlite. Today specimens of these products can be seem only in an experimental version or in extremely local use. Why? Because /the stage of development of the semi-industrial specimen, the organization of the technological process and the working out of the parameters for production are dragged out for years, and at times remain a scientific experiment/ /in boldface/. Science for the sake of science is also important. But when time itself with its requirements lies in wait for substitutes for scarce materials--wood, metal, marble--efficiency is needed in developments.

For example, the development of cellular block was halted at the final stage--the firing. They hurried to impose a taboo, but after a while a license was issued, and the output of a similar product was begun abroad. Was it necessary for the Ministry of the Construction Materials Industry to stop at the final stage, when in any event the expenditures had been made and time had been spent?

The story of kanazit, which was dragged out deplorable, may be a typical example from the practice of the institute. The ministry agreed in this question to the dispersal of scientific and material forces. The duplication of the elaboration of the problem along two channels--at the Scientific Research Institute of Rock and Silicates and the Armkhrustal' Association--led to unhealthy rivalry and the playing down of kanazit itself as a material for the glass industry, although it should have been a question of the greater continuity of one production technology or another. But the matter of kanazit had already gone so far, that it was too late to turn back without having justified the expenditures which had been made. But, what is the main thing, in the arisen situation it is impossible to disregard the economic factor. Armenia already has a sad experience with nepheline syenites, a lesson which cost a pretty penny.

Apparently, at the institute, when developing a new construction, insulating or acoustical material, they are not always guided by the dual criterion: to what extent will it itself replace a scarce material and how many scarce components and expensive organic compounds will be required to produce it?

The theme "perlite fiber glass material" from year to year has been recorded for the institute in the plan of technical innovations of the ministry. This is a three-layer insulating item, which does not require a complicated manufacturing method, the individual ingredients of it have been obtained in the country for a long time, therefore the Shinanyut Plant quickly set up production. And they even found a rich client--the Armyanskaya Nuclear Electric Power Station. Let us emphasize rich, because very scarce and expensive organic compounds are required for the production of perlite fiber glass material. Here perlite as a component no longer plays a decisive role, it can be replaced by another raw material.

The same kind of problem arises with decorative insulating material based on perlite and the waste products of vinyl acetate production, which is called GLEN-I. It also found a rich master in the person of the electronics industry, but is based once again on a scarce industrial emulsion. In the case with GLEN the Scientific Research Institute of Rock and Silicates, together with the Institute of Organic Chemistry of the Armenian SSR Academy of Sciences, provided a valuable service to the Polivinilatsetat Plant. The gaseous wastes, which were previously released into the air, began to be transformed into an emulsion, which the plant no longer wanted to turn over to the construction workers, but is using itself.

"Wherever the question rests on expensive polymers, the developers of the Scientific Research Institute of Rock and Silicates will suffer a fiasco," we were told at the republic Gosplan. "This is natural and should be foreseen by the developers. It is necessary to seek ways which utilize as much as possible the base of inorganic chemistry." In this sense the experiments with the decorative insulating material, which has been named Armiks and the fourth version of which is already being developed, raise doubts. It has been developed on the basis of scrap wood and paper in combination with perlite. It is favorable that the material will not require adhesives, the scrap paper will perform this function. But, after all, this scrap is also extremely necessary for the production of paper itself! The national economy is experiencing an acute shortage of them.

Here, I think, it is time to move on to the second "why." The perlite developers of the institute have been forced to abruptly change the direction of research not out of the good life. Had they gotten to work on time on cellular block, perhaps the further research would have taken a different direction, without turning to paper and wood. But now the fate of Armiks is already beginning to give trouble. The start-up of the flow line, which they literally assembled from bits and pieces, ordering the equipment at various places, is being delayed, in spite of a number of set deadlines. /Instead of the ministry carrying out centrally the orders for equipment, which at times is even not complicated for the experimental base of the institute, here everything is being allowed to take its own course/ /in boldface/. "If scientists need equipment or reserve materials, let them find them themselves, it is enough that we provide the financing." This position of the ministry has already become the principle. "Did they complete the laboratory stage? Let them find out where it is possible to conduct a semi-industrial experiment which confirms the feasibility of introduction. Were they able to obtain the new material? Let them find a client themselves, let them introduce it themselves."

It is difficult to judge from the side, whether the Scientific Research Institute of Rock and Silicates needs the bureau of introduction, which was organized here, but then abolished. But in the ministry they are inclined to believe that such a service is needed as a penetrating force. But it is necessary to "penetrate" primarily their own ministry. Is the authority of the board of directors and the scientific managers of the institutes and laboratories insufficient for this?

In this connection the story of stone slabs of complex shape, the processing method of which was developed by the Scientific Research Institute of Rock and Silicates, comes to mind. After protracted ordeals in the republic the advanced method found extensive use at the construction projects of Uzbekistan. Back in 1976! At the Ministry of the Construction Materials Industry they assure us that this is the first time they have heard about this. At present one machine tool, which is producing a pilot batch, has been set up at the Shinanyut Plant. But even with this the executives of the ministry "do not see" the promise of the new processing method, for they believe that the innovation does not have the proper publicity and application. "This is the duty of architects," they believe. But excuse me. In Uzbekistan precisely the republic Ministry of the Construction Materials Industry was the client.

Architects is an abstract concept. Perhaps the republic State Committe for Construction Affairs indeed should have given its weighty opinion, as in the question of developing light-weight concrete, light-weight panels and other components. But what about the other construction subdivisions of the republic, what are their relations with the institute, which is supplying the construction workers with new materials and technology? The ties are weak. /The Ministry of Industrial Construction and the Ministry of Rural Construction on the whole do not want to burden themselves with extra worries about introducing new products and to organize production, considering this the duty of the Ministry of the Construction Materials Industry/ /in boldface/.

But "their own" ministry is not producing any products made from perlite, the main thing for them is to provide the amount of raw materials, to recover and ship as much of it as possible. An plan and shipment are a good thing. But then amazing things happen: intumescent perlite was needed for insulation needs, they got it from Moscow. But the perlite was ours, from Aragat. They took it away, swelled it and shipped it in. This is called "transporting air."

Everyone who intends to have the reputation of being good managers actively claims that devitrified glasses are a material of the future, which is very necessary to chemistry and metallurgy, as a facing material in construction. But for some reason only workers of the laboratory of fused stone are looking after this. Kamchatka, Moldavia, Vladivostok and Kuybyshev are making contacts with them. Muscovites are entrusting them with the development of devitrified glasses for roads. Leningraders are helping to draw up the technical and economic substantiations for the production of sheet devitrified glass made from rock. These are all the results of the energy of the scientists themselves.

There will be opponents who will say that the newspaper is exaggerating the facts. But inquiry at the ministry: how many times a year were they in contact there with the leading developers of the institute, what were they interested in and how did they help? But there were many problems.

One of the leading subdivisions of the institute is the stone processing laboratory, which also is engaged in the development of the production technology and the automation of the operation of machine tools and flow lines. A test model of a belt grinder for the grinding and polishing of thin facing stones made of granite and marble was designed here back in 1977. But so far the development does not have a manager. And the blueprints of the machine tool are gathering dust on the shelves of the institute, while with the proper approach to the matter a very significant economic impact could have already been obtained. Or take the technology of obtaining small facing tiles made from the wastes of stone processing. Since 1974 it has not been introduced due to the lack of a low-duty press, which, incidentally, the Leningrad Plant of Forge and Press Equipment can produce.

What does all this attest to? Simply that in the ministry the Scientific Research Institute of Rock and Silicates enjoys the rights of an outcast. /Here they have a poor knowledge of the institute's problems, rarely go into them, and often simply brush them aside. Nonchalance, indifference and a subjective approach on the party of the departments of the ministry and its executives have already become the customary situation for scientists/ /in boldface/. It would seem that the activity of the Scientific Research Institute of Rock and Silicates should be at the center of attention of the management of the ministry and should be discussed regularly in the collegia. But during the past five years the collegia have review the work of the institute extensively only twice. Therefore it is not surprising that many developments of the Scientific Research Institute of Rock and Silicates have been neglected, without proper scientific grounds.

The Scientific Research Institute of Rock and Silicates operates under the aegis of the powerful, rich (let us not be afraid of this word) Ministry of the Construction Materials Industry. Subordination of a republic scale makes it possible to direct the attention of the collective to the solution of specific practical tasks and problems which are important to the republic.

/The ministry should bear direct responsibility for the affairs of the institute of today and tomorrow, for the topicality of the scientific themes, the effectiveness of the output, the quality and value of the scientific developments. And it is necessary to do everything so that the institute would become, at last, a mighty lever of science, which is able to get moving the important matter of introducing advanced scientific and technical thought in the construction materials industry/ /in boldface/.

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CREATION OF NEW 'INTERBRANCH SCIENTIFIC COUNCIL' PROPOSED TO SPEED INTRODUCTION OF NEW TECHNOLOGY

Yerevan KOMMUNIST in Russian 13 Jan 80 p 2

/Article by Academician of the Armenian SSR Academy of Sciences G. Davtyan: "The Path of Development"/

/Excerpts/ The problem of the relation of science and production is not new, it has existed for decades. But in our times its rational solution has acquired urgent national economic importance.

The art of managing science consists, on the one hand, in ensuring the development of promising theoretical research which is of practical importance today and, on the other, in doing everything possible so that the obtained results would be quickly prepared for use in production and would provide the national economy with new materials, new, advanced technologies and new sources of material wealth and well-being, making the conditions for the further development of the spiritual life of the people.

Many difficulties arise as a result of the fact that the completion of a study and the obtaining of valuable results do not yet make it possible to use them in the national economy. Several stages of additional development are necessary in order for a scientific achievement to be introduced in life. At times these additional developments may require more expenditures than the basic study. But there is no other way!

Another very significant circumstance should be noted: the ministries and departments, which are in charge of a specific sector of the national economy, at times do not burden themselves with concerns about the introduction of the achievements of science in production, or, what is worse, remain indifferent to them, while continuing to carry out production by methods which, although they are less efficient, are well organized and do not require additional efforts.

This is explained by the fact that, first, a good scientific result most often is not developed to the level of technology and, second, the economic efficiency of the new matter is unclear. Here the role of planning and design institutes is great. Precisely they are obliged to ensure a high technical level and an advanced direction of the new design documents. Unfortunately, they do not always succeed in this. The work of planning and design organizations needs serious improvement.

The proposals based on scientific research should go through many stages of testing and improvement. Unfortunately, this route is long, there are many obstacles on it. Here science, and not production, is the interested party.

I will cite an example. Our Institute of Agricultural Chemistry and Hydroponics back in 1962 received registered priority for a very efficient method and equipment for the continuous production of fresh green chop, which is rich in vitamins, enzymes and mineral components, reduces the epizooty of young animals and increases the productivity and product quality. Economists estimated that this could provide an economic impact of millions of rubles. So, 1,000 of these small factories could provide an annual increase of the production of suckling pig meat (the experiments were made with suckling pigs) by 20,000 tons, or eggs by 550 million--in both instances by 39 million rubles, while the capital investments would be only 20 million rubles. Seventeen years passed. Owing to the great efforts of the Ministry of Rural Construction it was possible to build only three such facilities, of them only one is presently in operation--at the Bartsrashenskiy Poultry Factory.

If the period of introduction had not taken 17 years, but, say, only 5, for 12 years we would have already obtained a large additional amount of meat, eggs and milk and would have substantially reduced the epizooty of livestock. The Scientific Research Institute of Microelectronics is now developing a more improved set of equipment for this purpose.

I have cited these examples, which I am well acquainted with, in order to try to make a generalization on the question, what procedure should be established in order to shorten the path of a completed scientific development to introduction in production. The arrangement of this path is as follows. /First of all it is necessary to create the conditions for a real increase of the efficiency of scientific research/ /in boldface/. For example, 10,000 analyses can be made both in 10 years and in 1 year. Consequently, the question arises of modern, highly productive precise methods of research and of staffs of specialists who are capable of increasing the level of research.

When a scientific result is obtained and the collective of the institute finds it useful, /the institute itself as the author should draw up the proposal, verify it under semi-industrial conditions, show the possible areas of use and through its main administration submit it to Gosplan/ /in boldface/.

After the discussion of the proposal at Gosplan, in case of basic approval, the proposal along with the other materials should be sent to /the economics institute of the corresponding specialization/ /in boldface/. Here the proposal will be substantiated economically and with the corresponding conclusions, perhaps in the form of several versions, will be returned to Gosplan.

It would be desirable to submit the proposal on introducing the results of the development, which has been approved by Gosplan and has been substantiated economically, to /the interdepartmental scientific and technical council/ /in boldface/ attached to the republic Council of Ministers. I have in mind not the creation of a new scientific administrative unit of the state machinery, but a council made up of leading specialists--the representatives of industry, agriculture, transportation, construction, science and other organizations. This council will discuss and draw up a draft of a government decree. On the recommendation of such an authoritative interdepartmental council a decision will be made, /which is now obligatory for all parties and is subject to inspection through the organs of the People's Control/ /in boldface/. Here it should be taken into account that not only the scientists, but also the representatives of production, who ensured the introduction and efficient operation of the new facility, should be rewarded for the introduction.

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TEST-EXPERIMENTAL FACTORY SERVES AS LINK BETWEEN VUZ AND INDUSTRIAL ENTERPRISES

Yerevan KOMMUNIST in Russian 25 Nov 79 p 2

/Article by Docent K. Ter-Mkrtchyan, director of the Independent Planning and Design Bureau of Yerevan Polytechnical Institute, and Docent S. Akopyan, scientific secretary of the Department of Scientific Research Work of Yerevan Polytechnical Institute: "VUZ Scientific Potential"/

/Text/ Yerevan Polytechnical Institute imeni K. Marx is not only a forge of engineering personnel, but also a major scientific research center which is connected with more than 100 industrial enterprises and scientific organizations of the country. The presence of a large number of highly skilled specialists makes it possible to solve within the institute the most important scientific problems which are of considerable interest to various sectors of the national economy.

Two scientific subdivisions operate at the institute: the Department of Scientific Research Work (ONIR) with six problem laboratories and the cost accounting Independent Planning and Design Bureau (SPKB). Many valuable developments have originated at them.

In the problem laboratories research is being carried out in the area of the development of high precision geodesic measuring systems and screens for projecting graphic information, modern electric surface vehicles, technological processes of cutting materials, as well as the prediction of earthquakes are being developed.

The problem laboratories are equipped with modern control and measuring instruments, devices and equipment and electronic computers.

The lack of its own experimental base has hampered the extensive introduction of developments in the national economy and has decreased the effectiveness of scientific research. This problem has now been solved. A pilot experimental plant, which is carried on an independent balance, has been set up at the institute. During the short time of its existence the plant has produced in small series models of the instruments and devices, which were developed at the institute: leveling systems, mills for fine grinding, pressure gauges and others. Instruments with the emblem of Yerevan Polytechnical Institute have been sent to clients in various cities--Moscow, Vil'nyus, Dnepropetrovsk, Groznyy and Ufa. The plant is as if a connecting link between the institute and industrial enterprises: the developed and approved technical specifications, mock-ups or prototypes of institute developments can be turned over without intermediate stages directly to the sectors of the national economy for series production.

It is gratifying to note the strengthening and expansion of the contact of the institute and the drawing up of economic contracts on cooperation with enterprises. The Armelektromash and Nairit production associations, the Charentsavan Machine Tool Building Plant, the Almaz Association, the Yerevan Motor Vehicle Plant, the Leningrad Nuclear Electric Power Station, the Moscow Institute of Radio Engineering, the Institute of Physics of the Earth and Atmosphere and a number of others are our partners. The introduction of institute developments is yielding a considerable impact. Thus, in the past two or three years more than 65 works have been introduced or have been directly used with a total economic impact in excess of 10 million rubles.

The control system of the Yerevan Electrical Equipment Plant was improved at the Armelektroapparat Association with the assistance of scientists of the institute. A considerable saving was obtained by means of the correct calculation of the workload of equipment and assembly areas according to the method proposed by the institute. A modernized system of hydrostatic leveling, which makes it possible to take high precision measurements of bucklings under the conditions of increased radiation, electromagnetic interference and vibration, was introduced at the Leningrad Nuclear Electric Power Station. The first section of the automated control system of passenger and economic documentation of second class airports was put into industrial operation at the Armenian Production Administration of Civil Aviation.

The majority of scientific developments of the institute are recognized as inventions. In the past three years alone 60 certificates of invention have been received. The instruments and devices, which have been developed here, have been displayed at the union and republic exhibitions of national economic achievements and have been awarded medals and certificates. Bronze medals of the Exhibition of USSR National Economic Achievements have been awarded to senior scientific staff member Yu. Abramyan for the development of an improved system of hydrostatic leveling and to Director of the Problem Laboratory of the Electric Car Docent E. Dilanyan, who developed a device for the fast charging of batteries.

In recent years at the institute much attention has been devoted to the enlargement and complexity of scientific research. Thus, the institute is taking part in the solution of the problem "Robot Manipulators," which was approved by the coordinating plan of scientific research and experimental design operations of the USSR Ministry of Higher and Secondary Specialized Education. The institute is also the coperformer of another important comprehensive theme: "The Development of a System of High Speed Surface Transportation With Magnetic Suspension." The study of the quality of the contact joints and the development of a method of increasing the reliability of large-scale integrated circuits have begun in accordance with an economic contract. This theme is urgent, since large-scale integrated circuits are used extensively in fourth generation computers and other modern electronic equipment.

The new directions of the development of scientific research at the institute have been outlined. One of the main ones is the development of technological processes for obtaining construction materials by the method of powder metallurgy. The fact that our institute is in the republic the scientific center for the coordination of work on modern corrosion-resistant materials and effective methods of protection against corrosion, attests to the achievements in another important direction.

Students are being enlisted extensively in research at our institute. This gives them an opportunity to gain the necessary experience of practical engineering work and to familiarize themselves with the latest research equipment. The most capable students, after graduating from the institute, continue to work in the Department of Scientific Research Work and the Independent Planning and Design Bureau.

Various forms of educational research work of the students are being actively used at the VUZ. A series of lectures on the principles of the organization of scientific research is given, during the period of practical work the students engage in research, student scientific and technical associations and groups, which are engaged in the elaboration of questions which are a part of departmental and inter-VUZ work, are in operation. A large number of students take part in the economic contractual jobs of the problem laboratories. Many course and graduation projects will now be fulfilled comprehensively by groups of students of different specialties of a single department, different departments of one or several VUZ'z.

The Special Planning and Design Bureau of the institute makes it possible to increase the opportunities of VUZ departments and laboratories for enlisting students in scientific research and experimental design work. The Department of Scientific Research Work and the Independent Planning and Design Bureau are successfully accomplishing the contact of the educational process with science, on the one hand, and VUZ science with production, on the other. Students independently perform jobs which are of applied importance. The enlistment of students in scientific research is conducive to the increase of the level of training of future engineers.

The introduction of the results of research in production is the main indicator of the potential of VUZ science. Introduction is a complicated process and the efforts of the institute alone here are clearly insufficient. The interest of the institute and the enterprise is necessary, the support of the appropriate ministries and departments is necessary. Only then will the desired goal be achieved. It seems to us that /it is necessary to set up at Gosplan and the Academy of Sciences of the republic a special service for technical and economic research and the introduction of scientific achievements in the national economy/ /in boldface/. Such organizations, groups and divisions exist in many republics and economic regions of our country and have already proven their worth.

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COOPERATIVE AGREEMENTS BETWEEN VUZ AND INDUSTRIAL ENTERPRISES DESCRIBED

Tashkent PRAVDA VOSTOKA in Russian 3 Nov 79 p 3

/Article by Doctor of Technical Sciences Professor N. Yusupbekov, deputy secretary of the party committee of Tashkent Polytechnical Institute: "The Return of VUZ Science"/

/Text/ In interpreting the tasks of VUZ science in light of the decree of the CPSU Central Committee and the USSR Council of Ministers on the improvement of the economic mechanism, the party committee of Tashkent Polytechnical Institute is seeking means of the effective cooperation of scientists with production collectives. The forms of this cooperation are diverse: the joint elaboration of problems which are of major scientific and national economic importance, the holding of conferences, the collective publication of joint scientific works, the probation of instructors at leading industrial enterprises and the involvement of prominent specialists in teaching activity at the VUZ.

At present 30 departments of our institute have more than 35 contracts on scientific and technical cooperation with major industrial enterprises and institutions. The cooperation of the chemical technology department with the Navoiazot Production Association, the mechanics department with the Tashsel'mash Production Association, the tractor plant and the State Planning and Design Technological Bureau of Machine Building, the power engineering department with the Tashkent Cable Plant and the aircraft construction department with the Association imeni Chkalov has yielded much. An economic impact in excess of 3 million rubles was obtained from the introduction of joint research. These departments have trained 6 candidates of sciences for production.

Periodically analyzing the themes of scientific research work of the departments and chairs, the party committee of the institute is seeking ways to eliminate work on minor themes. A scientific and technical commission, which is called upon to optimize the structure of the organization of scientific research work and to promote the increase of its theoretical level and practical importance, was set up at the institute on the initiative of the party committee and is actively working. The major creative subdivisions of the VUZ are being enlisted for the performance of the work which has been recommended by this commission.

In accordance with the decree of the party and the government sectorial laboratories on the basis of actively operating chairs are being set up at the VUZ's of the country. Such laboratories are also being organized at Tashkent Polytechnical Institute. Before the end of the five-year plan it is planned to open eight sectorial laboratories, and three this year. Unfortunately, so far only one has been opened. The Uzbek SSR Ministry of Higher and Secondary Specialized Education and several sectorial ministries of the republic have dragged out the creation of these laboratories.

The uniting of the creative efforts of different chairs, which makes it possible to create scientific developments at the meeting points of different sciences, when a scientific problem, which has been studied from different angles, is solved more completely, promises a great impact. The uniting of forces makes it possible to solve comprehensive programs in a shorter time, which under the conditions of the high rate of scientific and technical progress and the intensive replacement of various technologies is one of the decisive factors of the most rapid introduction of the results of research in the national economy.

As an example it is possible to cite the experience of the power engineering department. Here all the chairs under the direction of Academician Kh. F. Fazylov are engaged in extensive studies of one comprehensive scientific problem. The chemical technology department has concentrated four chairs on the solution of one comprehensive problem. Today it can already be claimed that such internal cooperation of the chairs is yielding its fruits. It not only unites the scientists, but also promotes their creative mutual enrichment. In short, the time has passed, when each chair solved its own problems alone, relying only on its own forces.

The involvement of students in the performance of scientific research is an important factor of the connection of the higher school with production. Unfortunately, far from everyone understands the importance of this matter. Therefore the party committee of the institute has taken under its supervision the acquisition by students of the skills of engineering and research labor during the time outside of studies. The number of students, who have been enlisted to participate in the performance of economic contractual work, has increased in recent years. At present more than 600 students are engaged in work on economic contracts. The creation of sections of scientific research work of students, experimental design bureaus, subdivisions of scientific laboratories, sectorial and problem laboratories attached to the departments is in the plans of the party committee.

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EDITORIAL URGES IMPROVING VUZ CONTRIBUTION TO R&D

Moscow SOVETSKAYA ROSSIYA in Russian 22 Nov 79 p 1

/Editorial: "VUZ Science"/

/Text/ Hundreds of thousands of scientists--professors, docents, scientific staff members--are working at the higher school of the country: the leading detachment of our intelligentsia is training skilled specialists for the national economy. For this the VUZ's are developing their own educational and scientific base, are steadily increasing the contribution to the solution of urgent problems of technical progress, which makes it possible to achieve the harmonious unity of the educational and research processes and to increase considerably the quality of the knowledge needed by each student.

The party and the government are constantly devoting much attention to the higher school. In recent years alone tens of new universities and institutes have been opened in the country, hundreds of new departments, chairs and laboratories have been set up. The recent decree of the CPSU Central Committee and the USSR Council of Ministers, "On the Increase of the Effectiveness of Scientific Research Work at Higher Educational Institutions," also attests to the concern and close attention to the higher school.

The task of VUZ scientists is to focus attention on the main directions of technical progress. Just as this is being done at our leading VUZ's, which have become major educational and research centers which have considerably enriched the treasury of domestic and world science. Among them are Moscow and Leningrad universities, the Moscow Institute of Aviation, the Moscow Higher Technical School imeni Bauman, Tomsk and Saratov universities. It is also possible to name many other higher educational institutions, the collectives of which are in the foremost positions.

The Moscow Institute of Engineering Physics invariably directs its attention to the needs of production. Its scientists combine basic theoretical research with urgent applied developments. Within the VUZ, for example, an original device was developed, which makes it possible to increase sharply the capacity of telephone lines and to substantially save expensive nonferrous metals. The development was introduced without delays. Moreover, the mass production of new instruments has been organized.

The list of achievements of the effectiveness of VUZ science, of course, could be extended. But, unfortunately, far from everywhere are things so successful. A considerable number of VUZ developments, which have prospects and promise a large economic impact, remain unimplemented for years. The reason for this is the reluctance of the managers of industrial enterprises to burden themselves with additional cares.

Just reproaches have been addressed, for example, to the Ministry of Construction, Road and Municipal Machine Building. A number of new machines and technological processes have been developed for the enterprises of this sector, they have undergone interdepartmental appraisal and have been recommended for introduction by the USSR State Committee for Science and Technology. But the ministry is in no hurry to implement these recommendations.

In a number of instances serious complaints should be made against the VUZ's themselves. Not all of their scientific research subdivisions are yet offering industry developments which have been executed on the proper level. At times when solving specific production problems, some scientists miss the main thing: the degree of economy, the competitiveness, the noninfringement of patents by the models of new equipment, technological processes and materials, which are being developed. At the laboratories of Volgograd Polytechnical Institute, for example, they worked for a long time on a means of producing one of the new chemical compounds. And only at the final stage of the scientific research--the stage of introduction--was it discovered that this problem had already been solved by sectorial scientific research institutes.

Some other institutes are also working below their capabilities. When concluding economic contracts with industry and receiving financing for the outlined research, the VUZ chairs and laboratories often do not fulfill the demands of the client: they change the planned theme and put off the deadline for the fulfillment of the scientific work.

Such a practice is clearly intolerable. The offices of the rector and the party organizations are obliged to halt all cases of scientific negligence without exception, to fight against work on minor themes and parallelism in research. It is possible and necessary to reduce such expenditures to a minimum by joint efforts, with active supervision on the part of the union and republic ministries of higher and secondary specialized education.

The higher school should take a more and more active position in the development of the economy, taking part in the implementation of major sectorial and intersectorial problems. For this it is necessary to use as completely as possible the advantages of our VUZ's, at which scientists representing all scientific trends without exception work. Who, if not they, is to be involved in comprehensive, multidisciplinary research? The work experience of the Northern Caucasus Scientific Center of the higher school is the best confirmation of this.

However, many educational institutes are still slowly rearranging the style and methods of their work and are avoiding urgent problems in every possible way. It is intolerable that one-fifth of the VUZ's of Russia perform 70 percent of the entire amount of scientific research. The disproportion is obvious: the contribution of other higher educational institutions is small. Each department, each chair and laboratory should take part in scientific research and display greater initiative. And the most important thing is that it is necessary to direct this initiative and to improve the established practice of economic contracts in every possible way.

Modern program-goal methods of planning research should be introduced actively and everywhere. And here the recently created educational scientific association of the higher school of Russia should play a coordinating and guiding role. It includes the research subdivisions of republic VUZ's and focuses their efforts on urgent directions which are necessary to production. A program on aviation technology, for example, has just been approved. It united the work of 57 major VUZ's and is financed centrally by the Ministry of the Aviation Industry. It is noteworthy that comprehensive planning of VUZ developments is called for at all stages, including the final stage--introduction at a specific industrial enterprise. This initiative merits the most extensive development.

The higher school should develop in every possible way the multidisciplinary research which concerns key questions of economics, production efficiency and the improvement of the fuel and power balance. The VUZ potential has enormous reserves. To find a worthy application for them is the task of USSR Gosplan and RSFSR Gosplan, the ministries of higher and secondary specialized education, many departments and party organizations.

The problem of developing VUZ science is also becoming urgent because today it is impossible to train young specialists without contact with basic and applied scientific research. The effective development of science in turn requires the more complete utilization of the total potential of the personnel, the enlistment of VUZ scientists and the rapid training of the young generation.

VUZ science holds an important place in the struggle for technical progress. To use its potentials more completely--in this lies the vital task of the day.

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